

WE CLAIM

1. A method for detecting overlay errors, the method comprising the steps of:

directing a primary electron beam to interact with an inspected object; whereas the inspected object comprises a first feature formed on a first layer of the inspected object and a second feature formed on a second layer of the object, wherein the second feature is buried under the first layer and wherein the second feature affects a shape of an area of the first layer;

detecting electrons reflected or scattered from the area of the first layer; and

receiving detection signals from at least one detector and determining overlay errors.

2. The method of claim 1 wherein whereas at least some of the directed electrons are reflected or scattered at small angle in relation to the inspected object.

3. The method of claim wherein the step of directing further comprising directing electrons to interact with the second feature.

4. The method of claim 3 wherein the step of detecting further comprises detecting electrons reflected or scattered from the second feature.

5. The method of claim 1 further comprising a preliminary step of charging the second feature.

6. A method for detecting overlay errors, the method comprising the steps of:

directing a primary electron beam to interact with a first feature and a second feature of an inspected object; whereas the first feature is formed on a first layer of the inspected object and the second feature formed on a second

layer of the object, wherein the second feature is buried under the first layer;

detecting electrons reflected or scattered from the first and second features; and

receiving detection signals from at least one detector and determining overlay errors.

7. The method of claim 6 wherein at least some of the detected electrons are reflected or scattered at small angle in relation to the inspected object.

8. The method of claim 6 wherein the second feature affects a shape of an area of the first layer.

9. The method of claim 6 wherein the step of detecting comprises detecting electrons reflected or scattered from the area of the first layer.

10. The method of claim 6 further comprising a preliminary step of charging the second feature.

11. A system for overlay error measurements, the system comprises:

means for directing a primary electron beam to interact with an inspected object; whereas the inspected object comprises a first feature formed on a first layer of the inspected object and a second feature formed on a second layer of the object, wherein the second feature is buried under the first layer;

at least one detector for detecting electrons reflected or scattered from the inspected objects, whereas at least some of the directed electrons are reflected or scattered at small angle in relation to the inspected object; and

a processor, coupled to the at least one detector, for receiving detection signals from at least one detector and determining overlay errors.

12. The system of claim 11 wherein whereas at least one detector is positioned such as to detect electrons that are

reflected or scattered at small angle in relation to the inspected object.

13. The system of claim 11 wherein the means for directing are capable of directing electrons to interact with the second feature.

14. The method of claim 13 wherein at least one detector is positioned such as to detect electrons reflected or scattered from the second feature.

15. A system for detecting overlay errors, the system comprises:

means for directing a primary electron beam to interact with a first feature and a second feature of an inspected object; whereas the first feature is formed on a first layer of the inspected object and the second feature formed on a second layer of the object, wherein the second feature is buried under the first layer;

at least one detector for detecting electrons reflected or scattered from the first and second features; and

a processor, coupled to the at least one detector, for receiving detection signals from at least one detector and determining overlay errors.

16. The system of claim 15 wherein at least one detector is positioned such as to detect electrons are reflected or scattered at small angle in relation to the inspected object.

17. The system of claim 15 wherein the second feature affects a shape of an area of the first layer.

18. The system of claim 15 wherein at least one detector is positioned such as to detect electrons reflected or scattered from the area of the first layer.